

Remarks

Applicants respectfully request reconsideration of the present U.S. Patent application as amended herein. Claims 1-6, 8, 11-15, and 17-20 have been amended. No claims have been added or canceled. Thus, claims 1-21 are pending.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 1, 8, and 17

Claims 1, 8, and 17 were rejected in the office action mailed September 10, 2003 as being unpatentable over Cohen, U.S. Patent 6,434,618, in view of Ramaswamy, U.S. Patent 6,424,621. The applicant submits that the claims are not rendered obvious by the references because they do not teach or imply that the forwarding element is configurable with a device-specific instruction set and that the control element outputs non-device-specific instructions to configure the forwarding element. Nor do the references teach the forwarding element plugin that translates the non-device-specific instructions of the control element to the device-specific instructions of the forwarding element.

Claim 1 recites

a forwarding element to perform data forwarding in a computer network, the forwarding element being configurable with a device-specific instruction set;

a control element to perform network signaling and control in the computer network, the control element outputting non-device-specific instructions to configure the forwarding element;

...a forwarding element plugin integrated with the control element for receiving the non-device-specific instructions from the control element, translating the instructions into the device-specific instruction set of the forwarding element, and transmitting the device-specific

instructions to the forwarding element, wherein the forwarding element utilizes the device-specific instructions to configure itself for performing data forwarding in the computer network.

Claims 8 and 17 recite similar limitations regarding translating non-device-specific instructions from a control element into device-specific instructions for configuring a forwarding element.

Cohen, on the other hand, teaches a programmable router capable of manipulating packets passing through it (col. 3, lines 36-40). Packets matching certain filtering criteria are sent to gateway programs that are dynamically loaded onto the router for manipulation (col. 3, lines 41-52). The dispatcher process interacts with the packet filter to send packets matching filter criteria to the gateway program corresponding to the matched filter rule (col. 4, lines 13-19).

The Office Action cites the programmable router and its dispatcher process as teaching the claimed forwarding element and forwarding element plugin while Ramaswamy is cited as teaching the control element. However, neither reference makes mention of the interface between the two elements. Indeed, there is not the slightest suggestion from either reference that the control element outputs non-device specific instructions to configure the forwarding element's packet forwarding operations. Nor does either reference suggest that the forwarding element is configured using a device-specific instruction set.

As a result, neither reference suggests the need for a plugin to translate the non-device-specific instructions from the control element into device-specific instructions suited to the forwarding element. The references are simply silent on the matter.

The Office Action notes that the programmable router of Cohen is a forwarding element and that the dispatcher process acts as a forwarding element plugin that receives data packets, which are presumably taken to be in a standardized form, and manipulates them such that they are then outputted in a specialized form. This is not equivalent to receiving non-device-specific instructions from a control element and translating the instructions into a device-specific instruction set for configuring the forwarding element.

The packets manipulated by Cohen's dispatcher process are data packets-to-be-forwarded rather than configuration instructions from a control element. It follows that the manipulated, or translated, packets of Cohen are not used to configure the forwarding element for performing packet forwarding operations, as recited by claim 1. Rather, the manipulations performed on data packets by Cohen's dispatcher process (address translation, encrypting/decrypting of packet payload, etc. [col. 3, lines 49-52]) *are* forwarding operations.

Even though the packets manipulated by Cohen's dispatcher process are not configuration instructions, to be sure, Cohen's dispatcher process must be configured to perform its forwarding operations somehow (i.e. the filtering criteria must be programmed). In fact, Cohen discloses that the gateway programs configure the dispatcher process by communicating to it the criteria of packets to be manipulated by

each program. However, even if a gateway program is taken to be a control element that configures the dispatcher process forwarding element, it does not do so by the claimed method of outputting non-device-specific instructions which are then translated to device-specific forwarding element instructions. In fact, Cohen teaches the exact opposite when it says that each gateway program configures the dispatcher process using “predefined functions and data structures... known to each gateway program [and] also known to the dispatcher process” (col. 6, lines 33-41). One of the main objectives of Applicant’s invention is to see that the precise configuration instruction set of a forwarding element is *kept hidden from the control element*.

Therefore, the Applicant submits that the references do not render claims 1, 8, and 17 obvious because they fail to teach a control element that configures a forwarding element by producing non-device-specific instructions which are then translated, by a control element plugin, to the device-specific instruction set of the forwarding element.

Claims 2-7, 9-16, and 18-21

Claims 2-7, 9-16, and 18-21 were also rejected as being rendered obvious by Cohen and Ramaswamy in further view of knowledge generally had in the art and Beighe, U.S. Patent 5,742,607. However, each of these claims depends from and includes the limitations of at least one of the independent claims, 1, 8, and 17. Moreover, Beighe and the referenced knowledge in the art are not cited to teach, nor do they teach, the deficiencies of Cohen and Ramaswamy which the applicant has already argued.


Consequently, the applicant submits that claims 2-7, 9-16, and 18-21 are not rendered obvious for at least the reasons set forth with respect to the corresponding independent claims.

CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections have been overcome. Therefore, claims 1-21 are in condition for allowance and such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application. Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,
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